

Laboratory Inspection Questionnaire

Inspection Information

Location: _____

Department: _____

Facility: _____

Room: _____

Roster Assignments (Email)

Laboratory Supervisor / PI: _____

Research Integrity: _____

Questions

1. General Safety

- _____ Laboratory has appropriate ventilation for the work being performed (chemical fume hood, snorkel, canopy hood, biosafety cabinet, etc.).
- _____ A current Michigan Tech emergency response poster is posted at the entrance to the laboratory.
- _____ Hazard symbols and warnings are posted as required for radiation, biohazard, high voltage, laser, unattended operations, and other hazards.
- _____ A hazard/risk assessment has been conducted to identify potential risks associated with laboratory equipment, materials and procedures. Methods to minimize those risks have been implemented.
- _____ Appropriate personal protective equipment is worn in the laboratory. Gloves, lab coats, and other potentially contaminated PPE are removed before leaving the laboratory.
- _____ A sink is available for hand washing in areas where hazardous materials are used.
- _____ All laboratory furniture (chairs, shelves, benches, cabinets, etc.) is in good condition, is appropriate for use in the laboratory, and is capable of supporting anticipated loads.
- _____ Work areas are well lit with all lights in working order.
- _____ All laboratory refrigerators, freezers, and microwaves are labeled with appropriate hazard signage. Food storage and preparation are prohibited.
- _____ A First Aid kit is available to deal with minor injuries that may be sustained in the laboratory. Contents are in date. No aspirin or other pain relievers.
- _____ Doors controlling access to the laboratory are closed at all times and locked when the laboratory is not occupied. Access is limited to individuals authorized to work in the laboratory.

_____ A laboratory-specific safety manual defining laboratory policies, safe practices, and procedures is available and accessible to everyone in the lab. Individuals working in the laboratory agree to follow laboratory defined policies, practices, and procedures.

_____ All employees that work in areas with hazardous materials or chemicals have completed Michigan Tech's Hazard Communication training.

_____ All reusable PPE that is exposed to skin is disinfected prior to being used by another person.

Are respirators used in the facility? This includes N95 respirators and dust masks. _____ Yes _____ No
(If yes, answer the sub questions)

_____ *Respirator users are registered with the University's respiratory protection program.*

2. Housekeeping

_____ The laboratory is well maintained, with work and storage areas clean and organized for safe and efficient use.

_____ Access to exits and safety equipment is unobstructed. Floors aisles, work areas, and entry/exits routes are uncluttered with no tripping hazards.

If necessary, an appropriate container is available for the disposal of broken glass. _____ Yes _____ No
(If yes, answer the sub questions)

_____ *Universal wastes are collected in containers that prevent a release to the environment, are labeled according MDEQ rules, dated with the date the first item was placed in the container, and are sent for recycling within 365 days of the date.*

If necessary, an appropriate container is available for the disposal of sharps. _____ Yes _____ No (If yes, answer the sub questions)

_____ *Sharps containers are sent for disposal every 90 days in the sharps collection.*

3. Fire Safety

Are flammable materials stored in the laboratory? _____ Yes _____ No (If yes, answer the sub questions)

_____ *Flammables are stored in an unmodified flammable cabinet when required. Storage does not exceed cabinet capacity. Nothing is stored on top of a free-standing cabinet.*

_____ *Flammables are stored in a flammable rated refrigerator and/or freezer.*

- _____ *A fire extinguisher is available in the laboratory. Fire extinguisher has a current inspection tag and is sealed.*
- _____ *Flammable gasses, liquids, and solids are not stored near exits or under staircases. This includes cabinets that contain flammable materials.*
- _____ *Fire sprinkler heads are unobstructed. All furniture and other materials (including cardboard boxes) must be at least 18 inches below the plane of the sprinkler heads.*

Are open flames utilized in the laboratory or shop? _____ Yes _____ No (If yes, answer the sub questions)

- _____ *Alternative options to using open flames have been evaluated and ruled out.*
- _____ *All combustible materials have been removed from within a 2-foot diameter of the work area.*
- _____ *If using flammable liquids, the smallest possible volume (maximum of 50ml) is used and contained in a metal or glass container with a tight-fitting lid.*
- _____ *All open flame soldering, brazing, or welding and all open flame glass blowing/glass manipulation is done either in an EHS/Facilities Management approved area or under an individually granted hot work permit.*
- _____ *Paper, boxes, and other combustible materials are properly stored and not in excessive amounts.*

4. Electrical Safety

- _____ Electrical panels have a 36-inch clearance in front of the panel. Breakers and disconnects are labeled.
- _____ Power cords on equipment and tools are in good condition (no exposed wires or frayed cords). Electrically powered tools and equipment are grounded or double insulated.
- _____ Battery terminals are protected to prevent electrical shocks or potential shorts.
- _____ Power strips are only used with computers or other low amperage equipment. Power strips are not "daisy chained"; or plugged into an extension cord.
- _____ All concerns about electrical safety have been addressed.
- _____ Electrical outlets within 6 feet of sinks and other wet areas are protected by a ground fault circuit interrupter.
- _____ Extension cords are used appropriately and only for temporary applications.

5. Chemical Safety

Are chemicals used in the laboratory? _____ Yes _____ No (If yes, answer the sub questions)

- _____ *A current chemical inventory listing the chemicals used in the laboratory is available.*
- _____ *A spill kit is available for cleanup of hazardous materials. Its location is posted in the laboratory.*
- _____ *Anyone working with chemicals in the laboratory is trained to use MSDSonline to access Safety Data Sheets (SDSs).*
- _____ *Chemical containers, including working solutions and those with non-hazardous contents, are correctly labeled with (i) full name of the chemical, (ii) concentration, (iii) hazardous properties, (iv) date, (v) responsible person.*
- _____ *Waste chemicals are collected at the point of generation, in a compatible leak-proof container. Containers are closed. All RCRA waste labels have the words "hazardous waste" and the contents spelled out.*
- _____ *An eyewash and/or emergency shower are available when required. They are inspected regularly and freely accessible (not behind closed doors).*
- _____ *Chemicals are well organized and correctly and safely stored. Chemical containers and storage shelves are in good condition. Hazardous liquids are stored below eye level.*

Does the laboratory require a Chemical Hygiene Plan? _____ Yes _____ No (If yes, answer the sub questions)

- _____ *There is a written chemical hygiene plan detailing the policies and procedures using chemicals in the laboratory.*
- _____ *All employees in the laboratory have reviewed the Chemical Hygiene Plan. This is documented.*
- _____ *The chemical Hygiene Plan includes written Standard Operating Procedures (SOPs) for chemical procedures in the laboratory.*
- _____ *All concerns about chemical safety have been addressed (also see section 7. Chemicals Requiring Special Precautions).*

6. Compressed Gases and Cryogenic Liquids

Cryogenic liquids are used in the laboratory. _____ Yes _____ No (If yes, answer the sub questions)

- _____ *Dewars are rated for the cryogenic liquids used in the laboratory.*
- _____ *The room where dewars or cylinders are used has appropriate ventilation. The space has been evaluated to determine if an oxygen sensor is required.*
- _____ *Appropriate personal protective equipment is available and used when handling cryogenic liquids. Written procedures are available.*

Dewars are labeled with the cryogenic liquid name and “warning extreme cold/frostbite hazard” or similar warning.

Chemicals in the gas phase are used in the facility (supplied by cylinders, gas generators, or storage tanks). Yes No (If yes, answer the sub questions)

Compressed gas cylinders are properly segregated, securely stored, upright, and capped when not in use.

All gas lines, including those fed from compressed and liquid cylinders or from gas generators, are labeled (in English), compatible with the gases they carry, appropriately connected or welded, and adequately supported.

The room where cylinders are used has appropriate ventilation. The space has been evaluated to determine if an oxygen sensor or a specific gas sensor is required.

Highly toxic gases are contained in a properly designed cabinet or stored and used under an appropriate engineering control.

Gases are listed on the emergency response poster.

In service compressed gas cylinders have the correct, non-modified, regulator for the gas being used, have accessible shutoff controls, and have no Teflon tape on the CGA or other compression fittings.

All concerns about compressed gases and cryogenic liquids have been addressed.

7. Chemicals Requiring Special Precautions

Hydrofluoric acid is used in the laboratory. Yes No (If yes, answer the sub questions)

Designated hydrofluoric acid areas labeled or clearly delineated?

The laboratory has calcium gluconate or other appropriate first aid readily available. All laboratory workers are familiar with first aid for hydrofluoric acid victims. A paper SDS is available for first responders.

Peroxide forming chemicals are used in the laboratory. Yes No (If yes, answer the sub questions)

Potential peroxide forming chemicals are dated when received and again when opened.

Peroxide test strips or other peroxide tests are available for testing reagents. Testing schedules established and documented.

Potential peroxide forming chemicals are disposed of when expired.

Temperature sensitive peroxide forming chemicals are stored at appropriate temperatures. Backup power for storage is available.

Peroxide forming chemicals are stored in opaque or amber containers.

Controlled substances are used in the laboratory. Yes No (If yes, answer the sub questions)

Controlled substances are properly secured.

The laboratory Principle Investigator holds the correct and current federal and state licenses.

Concentrated phenol is used in the laboratory. Yes No (If yes, answer the sub questions)

Low molecular weight polyethylene glycol (PEG 300 or PEG 400) is available for first aid. Laboratory workers are familiar with the appropriate first aid procedure for phenol contact.

Perchloric acid is used in the laboratory. Yes No (If yes, answer the sub questions)

Perchloric acid digestions are only done in appropriate hoods that include wash down capabilities.

Perchloric acid is stored in glass containers with non-metal secondary containers. Waste solutions are managed as RCRA hazardous wastes.

Ethidium bromide is used in the laboratory. Yes No (If yes, answer the sub questions)

Ethidium bromide preparation, use, and waste collection location are clearly delineated.

Elemental mercury (including thermometers, barometers, or other mercury containing devices) is present in the laboratory. Yes No (If yes, answer the sub questions)

A mercury spill kit is immediately available.

Elemental mercury is listed on the emergency response poster.

Alternative devices that do not contain mercury are used whenever possible.

All mercury-containing devices are enclosed or stored in secondary containers.

Pyrophoric chemicals are used in the laboratory. Yes No (If yes, answer the sub questions)

_____ *Written Standard Operating Procedures are available for the specific activities using pyrophoric chemicals.*

_____ *Training is provided by the PI or other experienced trainer for specific activities using pyrophoric chemicals. This training is documented.*

8. Biological Safety

Biological materials are used in this laboratory. _____ Yes _____ No (If yes, answer the sub questions)

_____ *Needles are not bent, sheared, broken, recapped, removed from syringes or otherwise manipulated by hand before disposal.*

_____ *Gloves used for work with biological materials are discarded as biological waste.*

_____ *Gloves are changed when they are contaminated or their integrity is compromised.*

_____ *All cultures, stocks, potentially infectious, and genetically modified materials are decontaminated/inactivated prior to disposal.*

_____ *Work surfaces and equipment are cleaned and decontaminated after completion of work and after any spill or splash of biological material.*

_____ *All procedures involving biological materials are performed in a manner that minimizes splashes and/or creation of aerosols.*

_____ *Safe work procedures are included in the laboratory safety manual for the use, storage, transport, and/or disposal of potentially infectious and genetically modified materials.*

_____ *Materials to be decontaminated outside the immediate laboratory are placed in a durable leak-proof container and secured for transport.*

This a biosafety level 2 (BSL-2) laboratory. _____ Yes _____ No (If yes, answer the sub questions)

_____ *Vacuum lines are protected with liquid disinfectant traps and HEPA filters.*

_____ *The laboratory supervisor ensures that personnel are properly trained and proficient in appropriate laboratory procedures and practices before working independently with BSL-2 agents or materials.*

_____ *If available, immunizations are offered for agents handled or potentially present in the laboratory.*

_____ *Procedures with a potential for creating aerosols, sprays or splashes are conducted within a properly maintained biosafety cabinet or other physical containment devices using appropriate personal protective equipment (PPE). Procedures may include: pipetting, centrifuging, grinding, blending, shaking,*

mixing, sonicating opening containers of infectious materials, harvesting infected tissues/cells, or inoculation of animals).

_____ *Durable leak-proof containers are used for collection, handling, processing, storage, and transport of all biohazardous material.*

_____ *Incidents involving potential exposure to bio-hazardous materials are reported to the laboratory supervisor, evaluated, and treated according to procedures described in the biosafety manual.*

_____ *Animals and plants not directly associated with work in the laboratory are not permitted.*

_____ *Biological Safety Cabinets are located away from doors and windows that can be opened, heavily traveled laboratory areas and other possible airflow disruptions.*

_____ *Biological safety cabinets are certified and properly installed so that fluctuations of laboratory air supply and exhaust do not interfere with proper function.*

_____ All biological safety concerns are covered by the questions in this section.

9. Equipment Safety

_____ Confined spaces are properly identified and labeled.

_____ Pinch points, rotating shafts, and other mechanical hazards are appropriately guarded.

_____ All ladders are in good condition and rated for the weight of the user and their equipment. Ladders used for servicing equipment are fiberglass.

_____ All equipment safety concerns are covered by the questions in this section.

Are any of the following stationary power tools present: table saw, band saw, grinder, or drill press?

_____ **Yes** _____ **No** (If yes, answer the sub questions)

_____ *Gloves are not worn around rotating equipment, including stationary grinders and buffers, drill presses, or lathes.*

_____ *Impact safety glasses with side shields are always worn, including under face shields.*

_____ *Stationary power tools will not automatically fire up after a power outage.*

_____ *Table saws have functional blade guards, spreader bars, and anti-kickback fingers in place. A push stick is available.*

- _____ *Vertical saw blades are completely covered except at the point of operation. Blade is appropriately tensioned and the guard feed rolls.*
- _____ *Bench style grinders are appropriately mounted. The gap between the work rest and the wheel is 1/8" or less; the gap between the tongue guard and the wheel is 1/4" or less.*
- _____ *Drill presses are appropriately mounted. Keys or chucks are spring loaded to eject key. Material is clamped or secured when possible to prevent rotation.*
- _____ *Emergency stop buttons mounted on equipment and walls are accessible. Deadman and similar safety switches are functioning correctly.*
- _____ *Written lockout procedures are available or referenced when repairing and servicing equipment. Employees who perform these tasks can verbally explain where to find the written lockout policy.*
- _____ *Compressed air nozzles are equipped with a safety tip that reduces dead end pressures below 30 PSI.*

Is there any noise hazard producing equipment? _____ Yes _____ No (If yes, answer the sub questions)

- _____ *Hearing protection is provided for work with noise hazard equipment.*

10. Field Safety

Do researchers conduct Field Research on or near water (oceans, lakes, streams, wetlands), on frozen waterways or using boats? _____ Yes _____ No (If yes, answer the sub questions)

- _____ *Personal Flotation Devices are worn when working on lakes, ponds, fast-moving streams, or other areas where drowning is possible.*
- _____ *All boats are equipped to meet local, State, and Federal rules and regulations.*
- _____ *When using boats, the total weight of the passengers, equipment, and other gear does not exceed what is stated on the boat's capacity plate.*
- _____ *Researchers working on ice-covered bodies of water have received appropriate instruction and training.*
- _____ *All snorkeling and SCUBA diving operations have been approved by Environmental Health and Safety.*

Do researchers conduct any off-campus, outdoor field research, including in forests, fields, wetlands, waterways, within traffic zones, urban locations or archaeological sites? _____ Yes _____ No (If yes, answer the sub questions)

- _____ *Researchers have consulted Field Safety information posted on the EHS website*
- _____ *A hazard/risk assessment has been conducted to identify the potential risks associated with field operations. Methods to minimize those risks have been implemented.*
- _____ *There are established check-in and check-out procedures for tracking who is in the field and who has returned.*
- _____ *Appropriate two-way communication devices such as radios, cell phones, or SPOT transmitters are carried in the field.*
- _____ *The implementation of a “buddy” system has been evaluated. If working alone, provisions for regularly checking in with a responsible adult have been established.*
- _____ *An appropriate first aid kit is carried in the field. Wilderness researchers have received appropriate advanced first aid training.*
- _____ *Researchers have received appropriate training on how to recognize, protect themselves from, and respond to, temperature-related illnesses (hypo- and hyperthermia).*
- _____ *All researchers can demonstrate vehicle-specific competency before, operating: vehicles with trailers, vehicles off-road, ATV/UTVs, tractors, snowmobiles, or other specialty equipment. Operators follow all safety protocols recommended by the manufacturer (seat belt use, use of a helmet, speed limits, passenger limits, terrain limits, etc.).*
- _____ *Researchers have addressed safely transporting, using, and disposing of chemicals. A spill response plan has been developed. Chemical first aid procedures have been addressed.*
- _____ *All researchers have been trained for the specific hand or power equipment they are operating. Appropriate PPE is provided and worn.*
- _____ *High visibility clothing is worn in traffic zones, along highways, and when working around heavy equipment.*
- _____ *All appropriate permits and permissions have been obtained to access and conduct research at the site. All fieldwork involving vertebrate animals has an approved and active IACUC protocol.*